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10/022,876	12/20/2001	Makoto Kano	217670US2S	6385

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EXAMINER

SAXENA, AKASH

ART UNIT PAPER NUMBER

2128

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/022,876	<b>Applicant(s)</b> KANO ET AL.	
	<b>Examiner</b> Akash Saxena	<b>Art Unit</b> 2128	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 27-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claim(s) 27-37 has/have been presented for examination based on amendment filed on 9<sup>th</sup> February 2006.
2. Claim(s) 1-26 are cancelled.
3. Claim(s) 27-37 are new claim(s) added with this amendment.

***Response to Applicant's Remarks & Examiner's Withdrawals***

4. Examiner withdraws the claim objection(s) to claim(s) 1-15 in view of the cancellation of these claims by the applicant.
5. Examiner withdraws the claim rejection(s) under 35 USC § 112 to claim(s) 1-26 in view of cancellation of these claims by the applicant.
6. Examiner withdraws the claim rejection(s) under 35 USC § 102 to claim(s) 1-4, 6, 9-14, 16-19 & 22-25 in view of cancellation of these claims by the applicant
7. Examiner withdraws the claim rejection(s) under 35 USC § 103 to claim(s) 5, 7-8, 15, 20 & 26 in view of cancellation of these claims by the applicant.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 27-37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Method claim 27 recites a simulation method with no concrete result. The result of the simulation is not claimed to be used in the technological art or displayed to the user to achieve a meaningful goal (similar to now cancelled claim 1).

MPEP Section 2106 [R-2] (Patentable Subject Matter - Computer-Related Inventions) recites:

The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02.

The fundamental test for patent eligibility is thus to determine whether the claimed invention produces a "useful, concrete and tangible result". The test for practical application as applied by the examiner involves the determination of the following factors:

- (1) *"Useful"* - The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished.
- (2) *"Tangible"* - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed, such as a disembodied data structure and method of making it. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. § 101. In *Warmerdam* the abstract idea of a data structure became capable of producing a useful result when it was fixed in a tangible medium which enabled its functionality to be realized.
- (3) *"Concrete"* - Another consideration is whether the invention produces a "concrete" result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. § 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

***Response to Applicant's Remarks for 35 U.S.C. § 102***

- 9. Claims 1-4, 6, 9-14, 16-19 & 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by YO1993.**

Regarding Claim 1-4, 6, 9-14, 16-19 & 22-25

Examiner has considered applicant's argument but they are moot in view of cancellation of claims 1-26. Applicant has presented arguments for the new claims using the YO1993. Please see new rejection below for the claims 27-37.

In support of the new claims applicant has argued:

In contrast to the claimed invention, according to the teachings of YO 1993, different simulation modes, such as the free-run mode and the congestion mode, are employed, but the disclosed free-run mode and the congestion mode do not have the different degrees of details.

Applicant had not pointed out or claimed the difference between the claimed invention and the YO1993. For support applicant has cited part of the specification, viz. Pg. 12 Lines 20-24:

In this case, the model data base 1 holds a plurality of simulation models having different degrees of details capable of being read from the model selector 3.

Pg.13 Lines 21-26:

Alternatively, the model is a macro model. This is an example of a simulation model requiring a lower amount of calculation and low degree of precision. The model 2 is a micro model. This is an example of a simulation model requiring a large amount calculation and a high degree of precision.

These cited paragraphs appear to refer at Fig.2 in applicant's disclosure. The Macro-model takes into account the vehicle as well as the other parameters, which affect the vehicle movement (link length, density of other vehicles and average speed).

This limitation is not taught by YO1993. YO clearly teaches macro and micro models and also addresses the simulation time and resource issue by suggesting the hybrid approach that combines these approaches (YO1993: Pg. 259. Section 2.1).

Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Further applicant has argued that "conditions for switching the simulation modes are up-to-the-minute traffic information, but do not depend on the state defined by the calculation result of the simulation". Examiner respectfully disagrees. The switching of the modes from free-run mode to congestion mode and vice versa depends on the other criteria including link attributes, link length, and (average) velocity on the Road Network besides the decisions of individual drivers. The goal of the simulator is to minimize the cost and travel time (Pg. 260- Section (2) Cost model) and the results calculated in terms of route planning and vehicle states (Pg.261 Section 3.3 – "Simulator Output") are used to calculate free mode or congestion modes for each link affecting the vehicle model (also see Section 2.3 (1) ). Hence applicant's arguments are considered and are found to be unpersuasive.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**10. Claims 27-29, 31 and 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by IEEE article “Dynamic Traffic Simulation for Controlling Traffic Flow” by Takayoshi Yokota et al (YO 1993 hereafter).**

Regarding Claim 27

YO 1993 teaches a simulation method comprising the steps of storing simulation models having different degrees of details (YO 1993: Abstract; Pg. 259, Col.1 Section 1, ¶ 2 Lines 9-14; Pg.259 Col.2 Section 2.1, Lines 1-4, 15-16; Pg.260 Section 2.2; Fig.3), the models including at least a macro model requiring a low amount of calculation and a low degree of precision of simulation and a micro model requiring a large amount of calculation and a high degree of precision of simulation, the models simulating a state of a moving object (Section 2.2); setting a simulation condition (YO 1993: Pg.260, Col.1 ¶1 Lines 8-12; Pg.259 Fig 1- Information Provision Model; Pg.261 Section 3 ¶ 2), an initial state of the moving object (YO 1993: Pg.260, Col.1 ¶1 Lines 4-7; Pg. 261, Section 3.1), and a selection condition (YO 1993: Pg.260 Section 2.2; Fig 2,3); first selecting one of the models based on the selection condition (YO 1993: Pg.260 Section 2.2; Fig 2,3); performing a simulation by a simulator based on the selected model, the simulation condition, and

the initial state of the moving object (YO 1993: Pg.259 Section 2.1 ¶ 3; Section 3.3) ; secondly selecting, during the simulation, one of the models based on the selection condition and a result of the simulation (YO1993: Section 3.3) and determining whether or not the first selected model for simulating the state of the moving object is different from the secondly selected model; and setting the secondly selected model to the simulator to perform the simulation based on the secondly selected model (as selecting mode free run or congestion mode) when the first selected model for simulating the state of the moving object is different from the secondly selected model (YO1993: Fig.2-3).

Regarding Claim 28

YO1993 teaches use of both macro and micro models and teaches above them as building the hybrid model that maximizes the precision (Section 2.1-2.2). The hybrid model has two modes – viz. free-flow mode (functionally equivalent to the micro model) and congestion mode (macro model where vehicle density and average link speed affected individual vehicle movement). Having two modes in the same model and toggling between them during simulation or two models are toggling between them are same as they are functionally equivalent. Further, YO1993 teaches the selection condition based on a state of the result of simulation (YO1993: Section 3.3) and a threshold value set in advance with respect to the moving object (YO1993: Fig.2).



Regarding Claim 29

YO 1993 teaches reading, converting and setting the “a variable value”, for example “total travel time”, based on the model (free-run /congested) they are in (YO 1993: Pg.260 Col.1 Lines 9-18; Section 2.2 ¶1).

Regarding Claim 31

YO 1993 discloses at least two models (Congestion based model and cost based model) from which any one or both can be selected directly (YO 1993: Pg.260 Section 2.2, 2.3):

Regarding Claims 34-37

YO 1993 teaches dividing the simulation time in plurality of times and designating the simulation model for each time (YO 1993: Pg.261 Section 3.1 ¶2; Fig.3). Further, the simulation time can be divided into partial time and different models can be simulated in that time. YO 1993 discloses a map disclosing delays on sample network designating the partial times and congestion model gets assigned to it (YO 1993: Pg.261 Section 4.1; Fig 6(a) & 6(b)).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**11. Claims 30 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over by IEEE article “Dynamic Traffic Simulation for Controlling Traffic Flow” by Takayoshi Yokota et al (YO 1993 hereafter), in view of paper presented at Mid Continent Transportation Symposium Proceedings “Development and Implementation of a Process for Reconciling Sub-area Macro and Micro Scale Modeling Applications” by William Troe (TO 2000 hereafter).**

Regarding Claim 30

Teachings of YO 1993 are shown in the preceding and parent claim 29.

YO 1993 teaches a conversion rule, but does not explicitly teach it to be dependent on the state of the moving object.

TO 2000 teaches concurrent macro-micro model simulation, with major portion of sub areas simulated under the macro model (regional model as disclosed) and area of interest (Traffic Analysis Zone (TAZ)) adapted/reconciled from the regional model with added detailed that require detailed information to create a micro model (TO 2000: Pg.3 Col.1; Bullet 2 “Focus on the sub area within regional model.”; Pg.1 Col.1, ¶1). The rule requires data dictating the state of periphery incorporated through the mathematical smoothing (TO 2000: Pg.3 Col.2 Bullet Point 4 & 5) and state of environment through non-subject specific details like lane geometry and counts (density) (TO 2000: Pg.1, Col.2 Section: “Data Collection”). Other details for variable conversion would be obvious by necessity.

It would have been obvious to one (e.g. a designer) of ordinary skill in the art at the time the invention was made to apply the teachings of TO 2000 to YO 1993 to

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perform variable conversion which would have been necessitated by the model switching between the regional (macro) model to micro model. The motivation to combine would have been that TO 2000 teaches implementation of model switching to make the best use of the data collected over time and augmenting micro model with such data (TO 2000: Pg.1 Col.1 Lines 27-31). Further, TO 2000 and YO 1993 are both analogous art detailing traffic simulation and modeling at macro and micro levels.

Regarding Claims 32-33

YO 1993 teaches a traffic simulator as taught in claim 27 above.

TO 2000 teaches selection condition includes dividing space into the (segment) Traffic Analysis Zone (TAZ) for micro model and have macro model simulated in other areas (TO 2000: Pg.3 Col.1; Bullet 2 "Focus on the sub area within regional model:").

***Relevance of Other Cited References***

12. "Traffic Flow Simulation for an Urban Freeway Corridor" (HAEFNER 1998) teaches micro model as model A, enhances with the density and downstream factor to build model B (macro model) and then combines to form model C (similar to hybrid model taught by YO1993) on pages 2-3. Further, this reference teaches segmentation based on special and temporal bases (at least in Fig. 2). This reference was provided in the previous office action.
13. Various other references cited with this office action, give general state of the art in user centered model section, micro and macro model combination, simulation techniques using commercially available software which are highly pertinent to the claimed invention and may be used in future as prior art.

***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akash Saxena whose telephone number is (571) 272-8351. The examiner can normally be reached on 9:30 - 6:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini S. Shah can be reached on (571)272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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